



# NON-TITLE V TECHNICAL SUPPORT DOCUMENT

PUBLIC NOTICE

**PERMIT NUMBER:** 140062  
**BUSINESS NAME:** Hickman's Egg Ranch, Inc.  
**SOURCE TYPE:** Poultry Egg Production  
**PERMIT ENGINEER:** LiSa Kon

**App. ID(s):** 410195  
**Revision(s):** 0.0.1.0  
**Revision Type(s):** Minor modification  
**Date Prepared:** 11/30/2015

**BACT:** No      **MACT:** Yes      **NSPS:** Yes      **SYNTH MINOR:** No      **AIRS:** No  
**DUST PLAN REQUIRED:** No      **DUST PLAN RECEIVED:** N/A  
**O&M PLAN REQUIRED:** No      **O&M PLAN RECEIVED:** No  
**PORTABLE SOURCE:** No      **SITE VISIT:** 11/20/2015

## PROCESS DESCRIPTION:

This facility houses chickens for the production of eggs for human consumption. The egg producing and processing establishment is located on an agricultural farm land. Each of the fourteen barns at the site is ventilated by a system of fans. Each barn is equipped with a diesel fuel emergency generator engine. In the event of line power failure, the emergency generator engines will provide power to the fans. Pages 4 and 5 of this document contain pictures of the establishment. Diagram A in page 3 shows the site diagram.

The facility is regulated for fuel combustion emissions from the emergency generator engines and boilers. Fuel combustion emissions consist of carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SOx), volatile organic compounds (VOC), and particulate matter (PM, including PM<sub>10</sub>).

## PERMIT HISTORY:

Date Received	Revision Number	Description
11/16/2015	1.0.1.0	MCAQD received permit minor modification application. See Purpose for Application.
11/17/2014	0.0.0.0	MCAQD issued new permit.

## PURPOSE FOR APPLICATION:

The minor modification is to notify MCAQD that the Permittee will be adding:

- 8 units of diesel fuel emergency generator engines to the existing 12 units. Each of the new engines is rated at 464 horsepower (h.p.), and certified to meet EPA Certified Tier 3 Emission Compliance. There will be a total of 20 diesel fuel emergency generator engines at the facility. The manufacturer's data sheets on the new engines were included together with the permit minor modification application. The engines will be installed at:
  - G-48 Pullet House L
  - G-49 Pullet House M
  - G-50 Lay House 14
  - G-51 Water Tank #2 Booster Pump
  - G-52 Lay House 12
  - G-53 Lay House 13
- 2 units of natural gas powered boilers at the egg washing processing plant. Each of the Lochinvar Copper Fin II Model CHL0992 boiler is rated at heat input rating of 990,000 Btu/hr. (note: The modification was revised to include the boilers on 12/3/2015; the original application that was received on 11/16/2015 did not include the boilers)

The facility is not eligible to operate under a General Permit for Stationary Emergency Internal Combustion Engines (ICE) because the aggregate power rating of all the stationary ICE on the site exceeded 2,500 h.p. In order to be eligible, the maximum aggregate power rating of all stationary ICE on the site must be 2,500 horsepower or less.

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**A. APPLICABLE COUNTY REGULATIONS:**

Rule 100: General Provisions and Definitions

Rule 200: Permit Requirements

Rule 220: Non-Title V Permit Provisions

Rule 280: Fees: Table C: Emergency Internal Combustion Engines

Rule 300: Visible Emissions

Rule 320: Odor and Gaseous Air Contaminants

Rule 324: Stationary Internal Combustion (IC) Engines

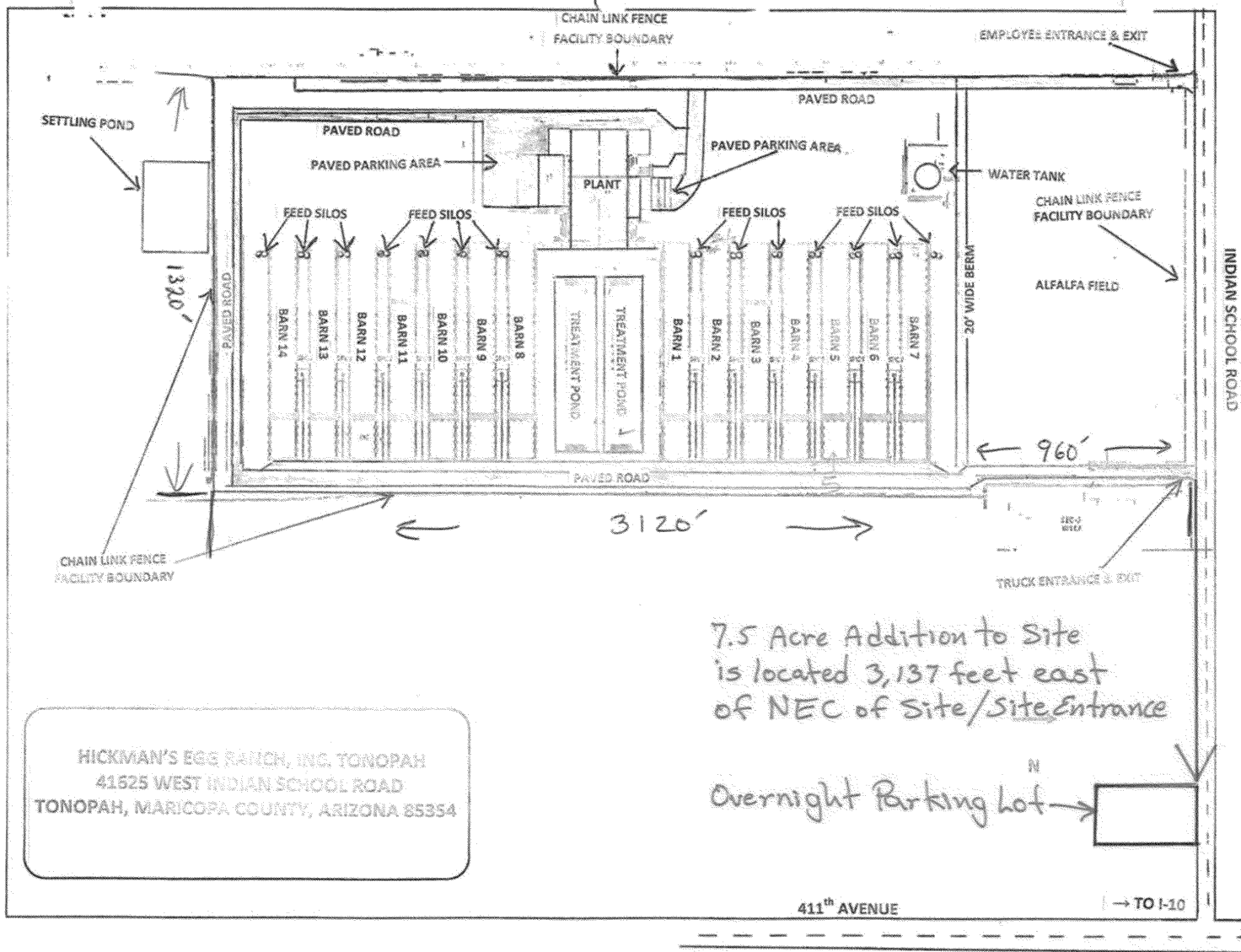
The Permittee is not subject to

- Rule 310 - Fugitive Dust From Dust Generating Operations. Rule 310 Section 103.1 exempts farm cultural practices.  
Per A.R.S. 49-457 the facility is subject to Agricultural Best Management Practices. You can find more information regarding this program at:
- <http://www.azdeq.gov/environ/air/plan/download/webguide.pdf>
- Rule 323 - Fuel Burning Equipment from Industrial/Commercial/Institutional (ICI) Sources because this rule only applies to unit/s that has a maximum design rated heat input capacity from fuels combusted in the generating unit of greater than 10 million (MM) Btu/hr (2.9 Megawatts (MW)).

There is a 10,000 gallon capacity aboveground diesel storage tank for diesel. The storage tank will be removed upon completion of construction at the facility.

Per MCAQD Rule Appendix D - List Of Insignificant Activities, Storage and Distribution, any emissions unit, operation, or activity that handles or stores no more than 12,000 gallons of a liquid with a vapor pressure less than 1.5 pounds per square inch (psia) is considered insignificant.

Diagram A: Site layout



These pictures were submitted together with the new permit application.



Figure 1: Two of the standby engines at one of the lay houses at the facility.

Silos are located between  
the barns



Figure 2: Silos are located in between the barns



Figure 3: One of the two treatment ponds. Structure to the left of the pond is Barn #1.



Figure 4: Another view of a barn.

Emergency generator  
engine



Figure 5: Barn structure.

## B. FEDERAL REGULATIONS:

- 1) The *Kohler*, 1528 h.p. emergency generator engine is subject to 40 CFR Part 63, Subpart ZZZZ. This unit was manufactured in the year, 2004.  
Any stationary, emergency reciprocating internal combustion (IC) emergency engines which includes (Diesel fueled) compression ignition (CI) emergency engines and (Natural gas fueled) spark ignition (SI) emergency engines constructed or reconstructed prior to 2006 will be subjected to 40 CFR Part 63, Subpart ZZZZ —National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating IC Emergency Engines.  
If the Permittee modifies or reconstructs the engine stationary compression ignition internal combustion engine after July 11, 2005, that engine shall comply with all applicable requirements of 40 CFR 60 Subpart IIII. [40 CFR §60.4200(a)(3)]

- 2) The following 19 units of emergency generator engines are subject to NSPS 40 CFR Part 60, Subpart IIII.

Engine Make	Model	No. of units	Model Year	Maximum Power	Emission Standard
Cummins	QSL9-G7-NR3	18	2014	464 HP	Tier 3
Cummins	QSL9-G2-NR3	1	2014	364 HP	Tier 3

- 3) Non-Applicable Federal Regulations

The chicken feed (grain) storage silos are not subject 40 CFR 60 Subart DD (Standards of Performance for Grain Elevators). Grain storage at the facility does not meet the definition of grain terminal elevator or grain storage elevator provided in 40 CFR 60.301. Grain terminal elevators do not include those located at livestock feedlots.

- 4) The 2 units of fuel burning (natural gas) boilers are:

- *Not subject* to National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources (40 CFR Part 63, Subpart JJJJJ) per 63.11195. This section itemizes the type of boilers that are not subject to the Area Source Boilers NESHAP. It states: *Gas-fired boiler*. If your boiler burns gaseous fuels (e.g., natural gas, process gas, landfill gas, coal-derived gas, refinery gas, hydrogen, or biogas) not combined with any solid fuels, or if your unit burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing it is a gas-fired boiler. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours

during any calendar year in order to maintain your status as a gas-fired boiler (see §63.11237 Definitions and §63.11195(e)).

- *Not subject* to the NSPS Subpart Dc. Subpart Dc only applies to commercial, industrial, and small boilers (steam generating units) that commenced construction or were modified after June 9, 1989 and have a rated heat input greater than 10 million Btu/hr (MMBtu/hr) and less than 100 MMBtu/hr.

**C. AIR POLLUTION CONTROL EQUIPMENT/EMISSION CONTROL SYSTEM(s):**

The facility is not required to maintain a dust control plan; exempt from Rule 310.

Rule 310-Fugitive Dust From Dust Generating Operations, Section 103.1 exempts farm cultural practices. For good neighbor practice, the Permittee did submit a Rule 310 DCP for the overnight parking lot at the facility.

**D. EMISSIONS:**

1) Emergency Engines

Emissions calculation is based on each engine operating at no more than 500 hours per any twelve consecutive month period. On the permit application, the Permittee stated that each engine operates no more than 52 hours per year; the operating hours are strictly for weekly testing.

2) Natural Gas Boilers

Emissions from the natural gas fuel burning equipment are based on the equipment being operated at 24 hours per day and 365 days per year.

See Table D-1 for the list of emission calculation worksheets and sources of emission factors. The following calculation worksheets are in Appendix A of this document.

Table D-1

Worksheet	Sources of Emissions Description	Sources of Emission factors
1	1 unit: 1,528 h.p engine	Uncontrolled emission factors for the diesel engines > 600 HP are from U.S. EPA AP-42, Table 3.4-1.
2	19 units of Tier 3 engines - 1 @ 364 h.p. & the remaining 18 units @ 464 h.p. per unit.	Uncontrolled emission factors for NOx, CO & PM are from Table 1 40 CFR 60 Subpart III. Uncontrolled emission factors for SOx and VOC are from US EPA AP-42, Table 3.3-1 for SOx & VOC .
3	2 units of natural gas boilers	Uncontrolled emission factors (AP-42 Chapter 1.4: Natural Gas Combustion) Table 1.4-1: Emission factors for nitrogen oxides (NOx) and carbon monoxide (CO) from natural gas combustion Table 1.4-2: Emission factors for criteria pollutants and greenhouse gases from natural gas combustion

The table below shows the facility wide allowable emissions.

Pollutants	1528 h.p. engine	NSPS engines	Natural gas boilers	Allowable Facility wide Emissions	BACT threshold
	lbs/yr	lbs/yr	lbs/yr	lbs/yr	lbs/yr
	Wrksht 1	Wrksht 2	Wrksht 3		
CO:	4,202	24,980	1,457	30,639	200,000
NOx:	18,336	28,823	1,734	48,893	50,000
SOx:	310	8,934	10	9,254	50,000
PM10	535	1,442	132	2,109	30,000
PM:	535	1,442	132	2,109	50,000
VOC:	539	10,765	95	11,399	50,000



140062\_0.0.1.0 calc  
sheet .xls

**E. HAP EMISSION IMPACTS:**

Based on the information provided in the permit application, the facility emits insignificant amount of HAPs; therefore, SCREEN modeling was not performed per the Department's HAPs policy.

**F. PERFORMANCE TESTING:**

There is no emission control system at the facility that requires performance testing.

**G. COMMENTS:**

Supporting activities associated with egg production includes egg washing, packaging, and cooking, washing, package and storage.

Hickman's uses two types of chemicals in their egg washing regimen. The following two chemicals are:

- Zep FS Chlorinated Defoaming Eggwash for washing eggs, and
- Zep FS Formula 4665 is used to disinfect eggs after washing.



ZEP 4665.pdf



Zep FS chlorinated  
deform .pdf

Hickman's uses the following chemical to clean egg washers that needs to be cleaned and washed to remove all heavy minerals.



egg washer cleaner  
xt\_2002.pdf

None of the chemicals contains VOCs and/or HAPs.



## Worksheet 1

ED\_001356\_00004231-00008



## Worksheet 2

Uncontrolled Emissions from NSPS Engines				
Equipment	HP Rating	Annual Operating Hours	Comments:	1 lb=
	364	500	1 unit, rated at 364	453.6 g
	8,352	500	18 units, each rated at 464 h.p.	
				Per EPA CFR 40 Tier 3 emission data
				g/hp-hr lbs/hp-hr lbs/hp-hr
				CO 2.6 0.00573 5.73E-03
				NOx + HC 3 0.00661 6.61E-03
				PM 0.15 0.00033 3.31E-04
TOTAL HP	8,716	1,000		
Emission factors for diesel:				
CO:	5.73E-03	lb/hp-hr	Sources of Emission Factors	
NOx:	6.61E-03	lb/hp-hr	Per EPA CFR 40 Tier 3 emission data	
SOx:	2.05E-03	lb/hp-hr	Per EPA CFR 40 Tier 3 emission data	
assumption: PM=PM 10	3.31E-04	lb/hp-hr	Emissions factors taken from AP-42, Table 3.3-1	
VOC:	2.47E-03	lb/hp-hr	Per EPA CFR 40 Tier 3 emission data (assumption: PM =PM10)	
			Emissions factors taken from AP-42, Table 3.3-1	
Emissions:				
	*Daily Emissions		Yearly Emissions	
CO:		lbs	24980	lbs
NOx:		lbs	28823	lbs
SOX <sup>2</sup> :		lbs	8934	lbs
PM <sub>10</sub>		lbs	1442	lbs
VOC:		lbs	10765	lbs

## Worksheet 3

## Natural Gas Fuel Burning Equipment Calculation Worksheet (Small Boiler < 100 MMBtu/hr)

Input rating of equipment, Btu/hr	
1)	990,000 Btu/hr
2)	990,000 Btu/hr
Totals	1,980,000 Btu/hr

## Emission factors (AP-42 Chapter 1.4: Natural Gas Combustion)

Table 1.4-1: Emission factors for nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO) from natural gas combustion

Table 1.4-2: Emission factors for criteria pollutants and greenhouse gases from natural gas combustion

CO:	84 lb/1E6 ft3	<u>Constants</u> 0.001 ft3/Btu for Natural Gas 24 hr/day 365 day/yr
NOx:	100 lb/1E6 ft3	
SOx:	0.6 lb/1E6 ft3	
PM10:	7.6 lb/1E6 ft3	
VOC:	5.5 lb/1E6 ft3	

# Emissions

	<b><u>Daily Emissions<sup>a</sup></u></b>	<b><u>Annual Emissions<sup>b</sup></u></b>
<b>CO:</b>	<b>4.0 lbs/day</b>	<b>1,457 lbs/yr</b>
<b>NOx:</b>	<b>5.0 lbs/day</b>	<b>1,734 lbs/yr</b>
<b>SOx</b>	<b>1.0 lbs/day</b>	<b>10 lbs/yr</b>
<b>PM10:</b>	<b>1.0 lbs/day</b>	<b>132 lbs/yr</b>
<b>VOC:</b>	<b>1.0 lbs/day</b>	<b>95 lbs/yr</b>



## NON-TITLE V COMPLETENESS DETERMINATION CHECKLIST

**Items 1-15 Front page:** Items 1 to 15 (14 for Renewals) must be completed.

*Notes to engineer:*

- *For renewal applications the source must either answer 'No' to questions 2-5 or submit an application for a permit modification.*
- *Item 8: Many applicants do not know the SIC code or NAICS code for their industry. For a new application the code can be obtained by doing an on-line search. <http://www.osha.gov/pls/imis/sicsearch.html>*
- *Items 5, 7 and 14: These may be the same for many applicants.*

Complete: ☒ Incomplete: ☐

**Item 16:** A simple site diagram has been included, preferably on a standard size paper. Detailed blueprints or construction drawings are not required.

Complete: ☒ Incomplete: ☐ N/A: ☐

**Item 17:** A simple process flow diagram on a standard size paper is preferred. A process flow diagram may not be needed for some small businesses.

Complete: ☐ Incomplete: ☐ N/A: ☒

**Item 18:** An O&M plan is required only for a control device. An O&M plan is not required for a spray booth. Instead of including the O&M plan with the application, an applicant may submit it after receiving the permit.

Complete: ☐ Incomplete: ☐ N/A: ☒

**Item 19:** A dust control plan, if required, must accompany the permit application. The plan will be reviewed and approved by the dust compliance group.

Complete: ☐ Incomplete: ☐ N/A: ☒

**Item 20:** The applicant needs to complete only those sections of the permit application that are applicable.

Complete: ☒ Incomplete: ☐ N/A: ☐

*Notes to engineer:*

- *Concerning Section Z: Many applicants will not be able to perform these engineering calculations. We will accept the permit application with a blank Section Z.*

Instructions for completing Sections A, B, C, D, E-1, E-2, F, G, H, I, J, K-1, K-2, K-3, K-4, L, M, X-1, X-2, Y and Z of the permit application are included at the beginning of each section and are self-explanatory.

In general, a material safety data sheet (MSDS) is required for each chemical used, stored or processed at the facility. Exceptions are for very common materials, such as gasoline, diesel, acetone, etc.

Business name: Hickman's Egg Ranch Inc.

Permit number: 140062 Rev 0.0.1.0

Completeness review completed.

Application determined to be:

Complete: ☒ Incomplete: ☐

Permit Engineer: LiSa Kon

Date: 02/17/2016